Injury in Kansas

Strategic Plan: Phase I

Injury Prevention Steering Committee
and the
Kansas Department of Health & Environment
2001

Future

Connecting Kansans to their

Kansas Department of Health & Environment
Bureau of Health Promotion
Office of Injury & Disability Programs

Injury in Kansas
Strategic Plan: Phase I

Produced by the Injury Prevention Steering Committee
and the
The Injury Prevention Program
Bureau of Health Promotion
Kansas Department of Health and Environment
2001

with funding support from
Project number U17/CCU715003-03
National Center for Injury Prevention and Control
Centers for Disease Control and Prevention

The Bureau of Health Promotion welcomes comments on the contents of this document. Please direct comments, questions, and requests to:

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INJURY FACT SHEET

Injury-Related Mortality in Kansas, 1995-1998

- The majority of injury deaths were due to unintentional injuries (66%). Intentional injuries, which include suicides and homicides represented 32% of the injury deaths (22% and 10% respectively). Intent was not specified for the remaining injury deaths.
- Injuries due to motor vehicle crashes were the number one cause of all injury deaths in Kansas, followed by firearms, falls, suffocation, poisoning, and drowning.
- Male deaths outnumbered female deaths in all three injury intent categories: suicide, homicide, and unintentional injury.
- Fire/flame was the leading cause of unintentional injury death among Kansans less than age five, followed by suffocation, drowning/ submersion, and motor vehicle traffic occupant.
- The highest rates of injury deaths of occupants in motor vehicle crashes occurred among males aged 15-24 and males aged 85 and older.
- The death rate due to falls increased with age, with rates of 9/100,000 among persons aged 65-74; 35/100,000 among persons aged 75-84; and 164/100,000 among persons aged 85 and older.
- The age groups with the highest death rates from unintentional injuries were persons aged 15-24 and persons aged 65 and older.
- Suicide rates were highest among males aged 15-44.

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ACKNOWLEDGMENTS

This document was developed in conjunction with the Kansas Injury Prevention Steering Committee. Participating members included representatives from the following agencies:

American Academy of Pediatrics, Kansas Chapter
Children's Mercy Hospital
Juvenile Justice Authority
Kansas Child Death Review Board
Kansas Coalition Against Sexual and Domestic Violence
Kansas Council on Developmental Disabilities
Kansas Department of Health and Environment
Kansas Department of Transportation
Kansas Department on Aging
Kansas Farm Bureau
Kansas Highway Patrol
Kansas Hospital Association
Kansas Office of the Attorney General
Kansas Medical Society
Kansas Professional Fire Chief Association
Kansas Public Health Association
Kansas SAFE KIDS Coalition
Kansas Safety Belt Education Office
Kansas State Board of Emergency Medical Services
Kansas State Department of Education
Kansas State Fire Marshal's Office
Kansas State University, Office of Community Health
Kansas Suicide Prevention Steering Committee
Osage County Medical Center
Overland Park Fire Department
Success By Six, Topeka
University of Kansas Medical Center, Department of Preventive Medicine
Via Christi Regional Medical Center, Wichita
Wichita Area SAFE KIDS Coalition

We wish to thank everyone who contributed time reviewing injury data, discussing key areas for injury prevention in Kansas, and reviewing draft documents. Special recognition is extended to the staff of the Office of Injury and Disability Programs at Kansas Department of Health and Environment, for their assistance in the development and production of this plan.

This strategic plan was funded by a grant from the National Center for Injury Prevention and Control, Centers for Disease Control and Prevention, Cooperative Agreement #U17/CCU715003-03. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the CDC.

INTRODUCTION
Injury in Kansas
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Unintentional injury and violence comprise one of seven statewide public health priorities in Kansas. To prevent injuries, the state must assess the context in which injuries occur, analyze trends and related factors, develop policy based on sound science, and educate the Kansas community about the serious nature of injuries as well as proven interventions for prevention. The Kansas Injury Prevention Steering Committee, representing a wide range of Kansas organizations and government agencies, has identified 14 injury issues for state injury prevention efforts. These injury issues include both specific injury areas and circumstances that predispose Kansans to injury. The state capacity planning document describes these 14 injury issues and identifies one to two long-term Kansas specific objectives for each.

Each injury issue highlighted in this plan requires a more detailed analysis of the impact of injury and strategies for intervention. The Office of Injury and Disability Programs (OIDP) at the Kansas Department of Health and Environment has a cooperative agreement with the Centers for Disease Control and Prevention to provide this analysis and to continue to build the state's capacity for injury prevention through 2003.

Consensus Building Process

The 14 injury priority issues documented in this plan were chosen by the Injury Prevention Steering Committee through a data-based, consensus building process. In 1998 the Injury Prevention Steering Committee was created and through 1999, the committee reviewed injury-related data from the following sources:

Kansas Behavioral Risk Factor Surveillance System
Kansas Center for Health and Environmental Statistics
Healthy Kansans 2000 and *Healthy Kansans 2000, Mid-Course Review*

The committee identified potential priority issues and made comparisons between data for potential priority areas, *Healthy Kansans 2000* and draft *Healthy People 2010* baselines. The committee also recommended a survey
to help with the prioritization of injury issues. Each steering committee member recommended 2-3 names to receive the survey mailing in addition to themselves. The survey mailing list was reviewed to ensure representation across geographic areas and injury topics. The survey was developed and mailed in 1999, and survey results were used to narrow the injury priority issues to 14.

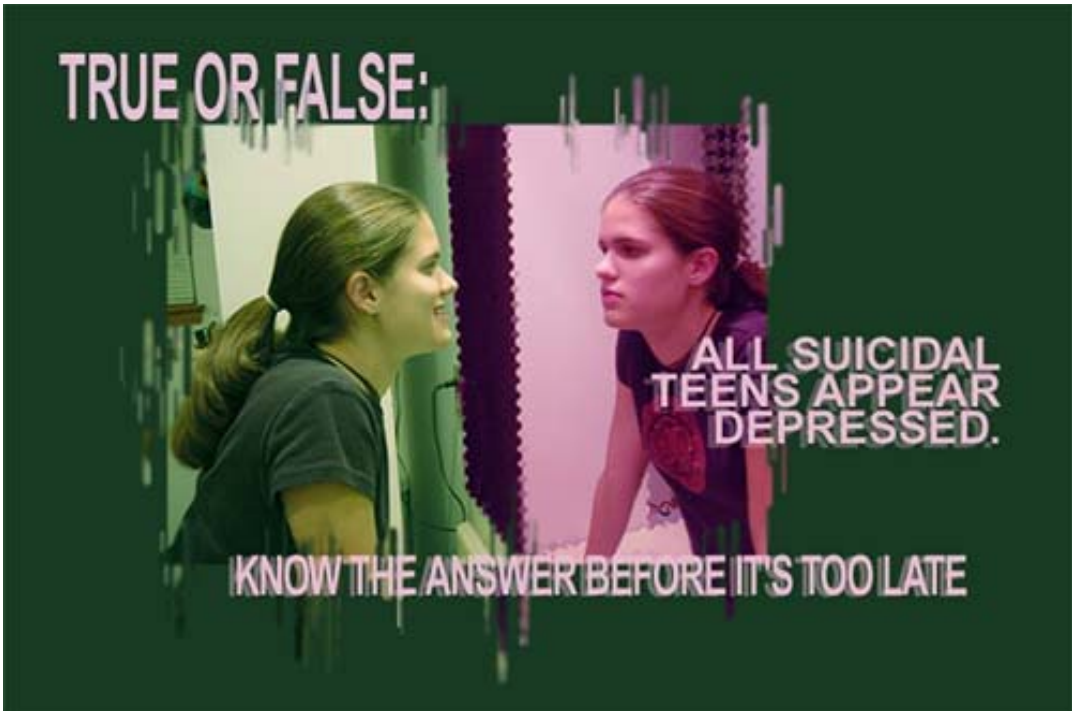
Subcommittee meetings to address cross cutting concerns (children aged 0-14, adolescents and young adults, data issues) provided additional information and data sources that were used to draft objectives and potential strategies for the 14 priority issues. Efforts to create subcommittees for working age adults and the elderly population did not result in enough interest to specifically address these stages of the life span. Subsequent recruitment efforts have increased the number of steering committee members with interest and expertise in these additional age groups. Future planning efforts will address cross cutting concerns relevant to all life cycle stages.

In 2000, the Injury Prevention Steering Committee approved a format for the planning document. For each priority issue, KDHE staff drafted a two-page section, including highlights from data, targeted activities, and 1-3 objectives with baseline data. Each section was mailed to steering committee members with expertise in that subject matter for review, edits were incorporated, and the document was presented to the steering committee in July 2000. At this meeting, the document achieved consensus approval, with minor changes. In 2001, all data were reviewed and updated prior to printing.

The process of creating this document has had a significant impact on injury prevention in Kansas. Statewide visibility for injury prevention and control substantially increased through collaborations, presentations, news articles, and participation at conferences and meetings. This is evidenced by the increased number of requests for technical assistance and collaborative projects by steering committee members and others.

SECTION I

AREAS OF INJURY



The winning entry for the Kansas Youth Suicide Poster contest sponsored by the Suicide Prevention Steering Committee. The poster was submitted by Erin Simpson of Olathe North High School.

The Injury Prevention Steering Committee reviewed state and national data, and through a consensus process identified the following areas for injury prevention in Kansas.

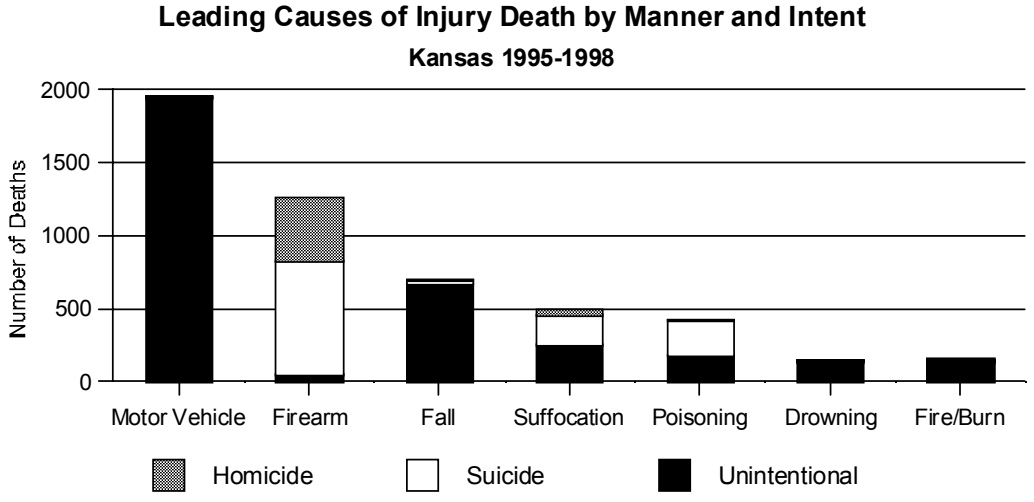
Injury Mortality and Morbidity in Kansas

Injury is the *number one killer* of Kansas residents between the ages of 1- 44.[1]

Each day in Kansas, an average of 4 people die from injury.

Each week, on average 28 Kansas residents die from injury:

- 9 die in traffic crashes
- 6 die from a firearm
- 3 die from a fall
- 2 die from suffocation
- 2 die from poisoning
- 6 die from injuries related to fire, machinery or other injury.



Objective 1: Reduce the age-adjusted rate of deaths due to injury to no more than 53.4 per 100,000 population, by 2010.

Baseline: 59.6 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Injury Mortality in Kansas (1995-1998)[1]

- The majority of injury deaths were due to unintentional injuries (66%). Intentional injuries, which include suicides and homicides, represented 32% of the injury deaths (22% and 10% respectively). Intent was not specified for 2% of the injury deaths.
- Suicides were most prevalent among males aged 15-44.
- The age groups with the highest death rates from unintentional injuries were persons aged 15-24, and persons aged 75 and older.
- Male deaths outnumbered female deaths in all three intent categories: suicide, homicide, and unintentional injury.
- The highest rates of motor vehicle traffic collision injury deaths occurred among males aged 15-24, and males aged 85 and older.
- Motor vehicle traffic collision injuries were the number one cause of unintentional injury deaths in Kansas, followed by falls.

Injury Morbidity in Kansas [2]

- Unintentional injuries accounted for 86% of all injury discharges E-coded by Kansas hospitals; intentional injury accounted for 14% of the injuries (self-inflicted 10%, assaults 3%, and 1% other).
- The number of hospitalizations for both unintentional and self-inflicted injuries was higher among females compared to males.
- The number of hospitalizations for assault was higher among males.
- Falls were the number one cause of injury.
- Among firearm-related injury hospitalizations, E-codes indicated the cause of injury was self-inflicted or assaultive for 4 out of every 5 hospitalizations.

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- The percent of injuries E-coded as motor vehicle related injuries was highest among the 15-19 year age group.

Recommendations

Most injuries are preventable. Injury prevention generally follows the three E's:

Education. Education of the general public and targeted groups, such as policymakers, is important in the long term prevention of injuries.

Enforcement. Passage and enforcement of laws and policies directed toward the prevention of injuries is critical.

Engineering. Technology changes that provide for a safer environment is one of the most effective strategies (along with legislation) to prevent injuries.

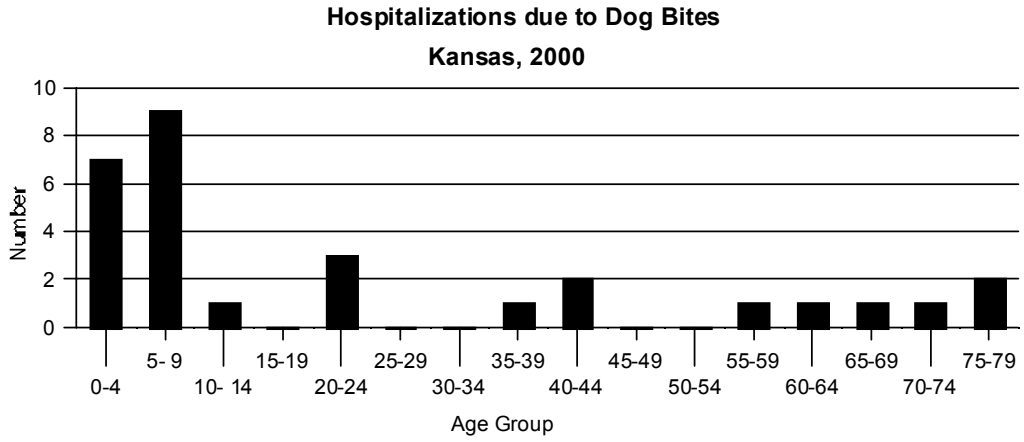
***References*:**

1. Center for Health and Environmental Statistics. KDHE. Topeka, KS. Kansas Hospital Association.
2. Kansas Hospital Discharge Data System, 1997 [data file] Approximately 53% of all hospital discharges due to injury included an external cause of injury code (E-code). Therefore, the findings in this report likely underestimate the overall burden of injury in the State of Kansas.

Dog Bites

Each year in the United States, there are approximately 17 deaths from injuries related to dog bites, nearly 6000 hospitalizations, and more than 330,000 emergency department visits. [1]

Every 40 seconds, someone in the United States seeks medical care because of a dog bite. [2]



Objective 3: Establish adequate surveillance of dog bite related injuries by 2005.

Kansas baseline: Unavailable

Kansas Observations [3]

- According to hospital discharge data, there were 26 hospitalizations in 1997 for injuries E-coded for dog bites. Nine of those hospitalizations were among children aged 9 and under.
- More males were hospitalized for dog bites than females.
- Hospital discharge data is the only source of statewide information available regarding dog bite injuries. Dog bite injuries are an unrecognized public health problem that periodically becomes spectacularly visible by the occasional tragic fatal injuries, which are widely reported by the media.

National Observations

- Between 1979 and 1994, 279 people in the United States were killed in attacks by dogs. [4,5]
- Estimated costs of dog bite related injuries are high. Hospital charges for dog bite injuries totaled $40.5 million in 1994. Hospital charges were highest for those aged 0-4 and those aged 40 and older. [1]
- The 5 most common breeds involved in fatal dog attacks in the United States between 1979 and 1996 were: Pit bull, Rottweiler, German shepherd, Husky, and Alaska malamute. [5]

References

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4. Sacks, JJ, Sattin, RW, & Bonzo, SE. (1989). Dog bite related fatalities from 1979 through. *JAMA*, 262, 1489-92.
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6. CDC (1997). Dog-bite-related fatalities–United States, 1995-1996. MMWR, 46,463-467.

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Recommended Strategies

Developing a surveillance system for dog bites would be helpful in establishing prevention programs. Information should include the circumstances surrounding the bite, ownership, breed, sex, age, spay/neuter status, and history of prior aggression of the dog; the nature of restraint before the bite incident; and information about the bite victim (age, location, gender, area of body where bitten, and activities engaged in during incident).

Educate dog owners about the proper selection, training, and care of a dog so as to reduce the possibility of owning a dog that bites. [5]

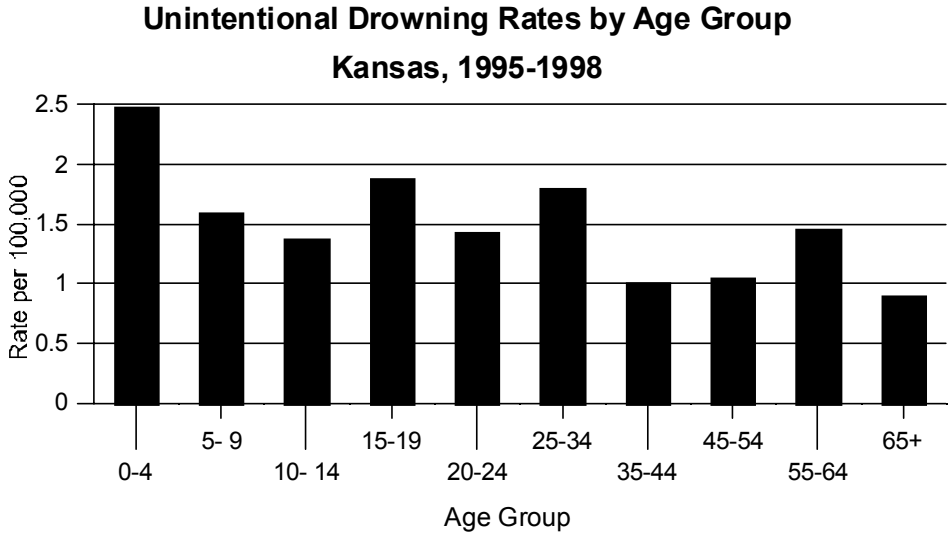
Targeting specific breeds of dogs may be unproductive since the representation of breeds changes over time. A more effective approach may be to target irresponsible dog owners. [6]

Drowning

152 Kansans died by drowning between 1995 and 1998.

Unintentional drowning deaths were most numerous among the 25-34 year age group, but children under 5 had the highest rate per 100,000.[1]

Drowning is the third leading cause of injury death among Kansas children under 5 years of age. [1]



Objective 7: To reduce the age-adjusted rate of unintentional drowning deaths to no more than 1.2 per 100,000 population by 2010.

Baseline: 1.8 per 100,00 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Kansas Observations (1995-1998)[1]

- The majority (82%) of drowning victims in Kansas were male.

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- In Kansas, drowning deaths were most numerous among persons aged 0-4 years, and those aged 25-34.
- 90.8% of the drowning deaths that occurred in Kansas were unintentional.
- Drowning was the 6th leading cause of injury death among Kansans.

National Observations

- In the United States, drowning is the second leading cause of death among children aged 1-14.[2]
- In the United States in 1997, the overall age-adjusted rate of drowning for blacks was 42.6% higher than that for whites. African American children ages 5 through 19 years drowned at 1.5-3 times the rate of whites. [3]
- According to estimates calculated from U.S. Consumer Product Safety Commission data (1991, 1993), 60 to 90% of drownings among children aged 0-4 years occurred in residential swimming pools. [3]
- Alcohol has been shown to be a contributing factor in drowning deaths. [3] However, a study conducted in the state of Washington has shown that drowning deaths in persons aged 15 and older that were attributable to alcohol decreased from 50% in 1975 to 22% in 1995.[4]

Recommended Strategies

Increase personal responsibility for limiting alcohol use during recreational activities.

Public awareness campaigns about the dangers of mixing alcohol and water related activities aid in the prevention of water related injuries and deaths.

Close adult supervision for children who are playing in or around water.

Keep children away from open water sources, including 5 gallon buckets of water.

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1. Center for Health and Environmental Statistics. KDHE. Topeka, KS.
2. National Center for Health Statistics. (2000). National Mortality Data, 1998. Hyattsville (MD): NCHS.
3. Centers for Disease Control & Prevention. (n.d.). Drowning prevention. Retrieved Jan. 15, 2002, from
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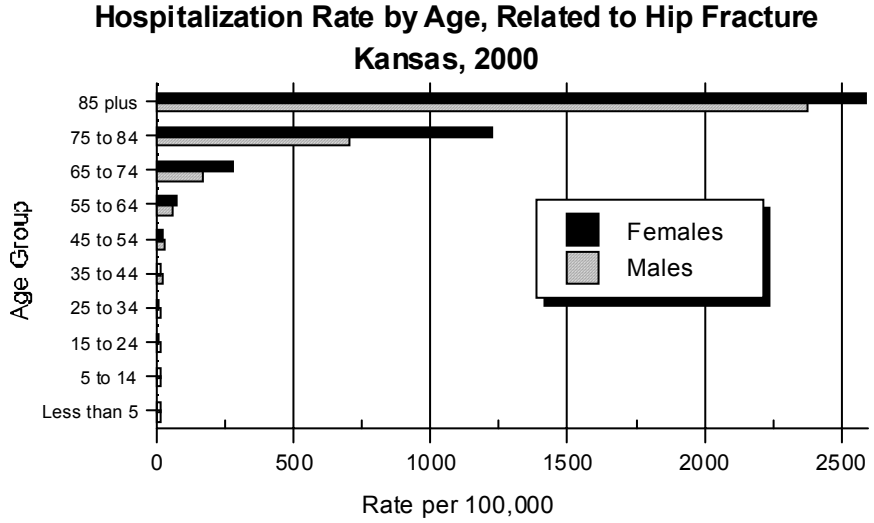
Falls

"Older adults are hospitalized for fall-related injuries five times more often than they are for injuries from other causes."

Hip fractures are the most serious and debilitating consequences of falls.

In 1994, the direct cost of fall-related injuries among adults $65 years in the United States was an estimated $20.2 billion.[2]

Emergency room data and hospital discharge data are two good sources of data for fall-related injuries.



Objective 8: Reduce the age-adjusted death rate caused by unintentional falls and fall-related injuries to no more than 2.4 per 100,000 population by 2010.

Kansas baseline: 7.1 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistic, 1998

Kansas Observations Morbidity, 1997 [3]

- Persons aged 75 and older are most likely to suffer serious injuries related to falls
- Hospital E-coding shows that falls are the number 1 cause of hospitalizations for persons aged 35 and over.
- More hospitalizations among females than males aged 65 and older occur each year for injuries related to falls.

Mortality

- In 1997, 133 Kansans aged 65 and older died from fall-related injuries.[4]
- The death rate (1995-1998) due to falls increases with age among Kansans, with rates of 9/100,000 among persons age 65-74; 35/100,000 among persons aged 75-84; and 164/100,000 among persons aged 85 and older. [4]
- The highest rate of deaths due to a fall occurred among males aged 85 and older (1995-1998).[4]

National Observations

- Most falls among the elderly occur in the home (60%), in public places (30%), or in a health care facility (10%).[5]
- The age group most at-risk for fall-related injuries are those persons age 75 and older. [5]
- Falls account for 87% of all fractures for people 65 years and older. [7]

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Recommended Strategies [5,6]

Physical activity, environmental modifications, and close supervision of prescription medication are three areas where prevention strategies have been found to be effective in reducing falls.

Statewide surveillance of falls, with standardized computer based collection systems, would aid in the tracking of fall - related injuries, as well as the evaluation of the effectiveness of prevention and control efforts.

Making health care workers and providers aware of the risk factors for falls among the elderly may be an important component to a fall prevention program.

***References*:**

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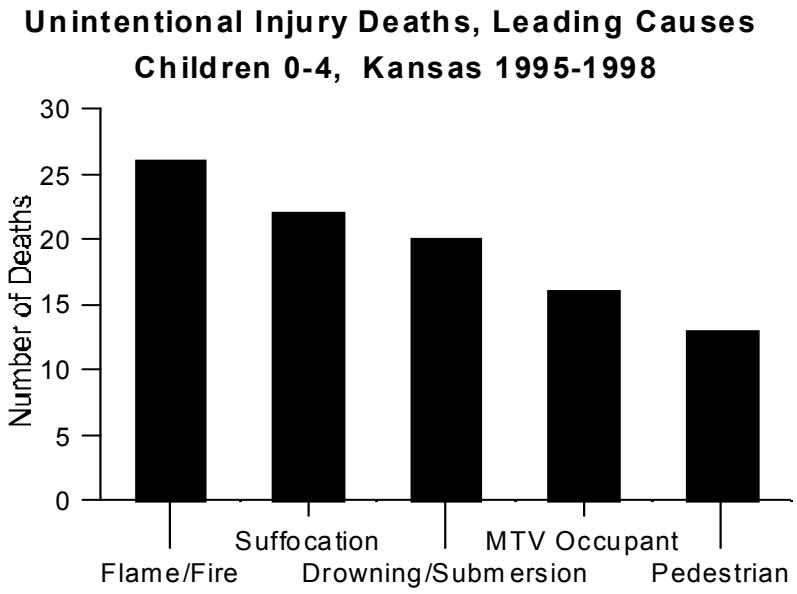
Fire/Burn Injuries

The United States has one of the highest fire death rates of the industrial countries, and Kansas is no exception.

"Americans have the world's most advanced fire-prevention technology and best-trained [fire persons.] Yet these advantages seem to contribute to our indifference about letting fires start. We permit millions of fires that other countries don't". [1]

"...in many cases a working smoke detector would have provided those extra seconds that could have meant the difference between life and death in a fire...."

Conclusions of the Kansas State Child Death Review Board, Annual Report, March 1999, after investigating another year's fire death toll on Kansas children. [3]



Objective 9: Reduce the age-adjusted rate of residential fire deaths to less than .6 per 100,000 population.

Kansas baseline: .93 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 10: Increase the proportion of households who report having a working smoke alarm in their home to 100% by 2010.

Kansas Baseline: Of the households surveyed, 90% had an installed and working smoke detector

Kansas Observations

- Fires kill Kansans of all ages, but those under 5 or over 65 are particularly vulnerable (1995-1998).[2]
- Fire/flame was the leading cause of unintentional injury death among Kansans under five (1995-1998).[2]
- The Child Death Review Board Annual Reports published in 1999, 1997 and 1996 document a continuing pattern of children dying in home fires; out of 24 children who died in fires during the periods covered by the reports, 22 were killed in home fires. [3]
- From 1989 to 1993 the Kansas fire/flame age adjusted death rate per 100,000 population declined from 2.2 (56 persons) to 1.4 (36 persons). Additionally, the death rate declined further to 1.0 (28 persons) in 1998.[4]

National Observations [5]

- Residential fires account for an estimated 3600 deaths and 18,600 injuries each year in the United States.
- The prevalence of smoke alarms across the United States is high. In 1995, 93.6% of households in the United States reported having at least one smoke alarm.
- Homes with smoke alarms have almost half as many fire related fire-related deaths compared with homes without smoke alarm.

"Do You Know Where Your Matches and Lighter Are?
1st Place American Burn Association 2001 Poster Winner
K. Stroup, J. Coleman III, K. McGregor
Riley Hospital for Children, Indianapolis, IN

Scald/Burn Injuries[6]

- The leading cause of burn injury among children is scalds.
- Hot tap water accounts for 25% of all scald burns.
- In 1998, 88,000 children were treated in emergency rooms for burn-related injuries.
- Of these, 62,500 were thermal burns (curling irons, room heaters, ovens, irons, fireworks) and 25,500 were scald burns (hot foods and liquids).

Recommended Strategies

Installation, testing and maintenance of smoke alarms in homes, particularly homes in lower income areas will reduce fire-related deaths. [5] The use of existing social services (e. g. Meals on Wheels) might be effective outreach mechanisms.

The adoption of self extinguishing cigarette legislation may be useful in preventing fire caused by smoking materials.

A well thought out fire escape plan is essential with two exits from every room. Plan and practice fire drills, including a meeting place outside of the home.

Education efforts focused at setting hot water heaters to 120 degrees or below may reduce scald injuries.

References

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Firearms

From 1995 to 1998 over one thousand Kansans were killed by firearms; most deaths were intentional: suicides and homicides.[2]

KDHE Center for Health and Environmental Statistics

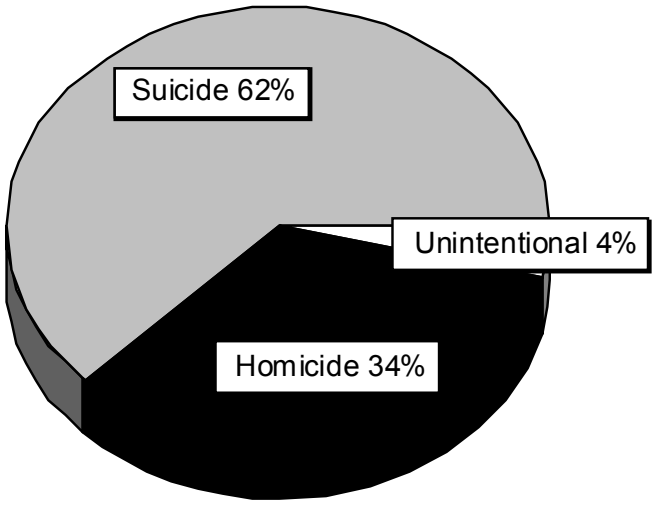
"Nationally, the financial costs of firearm injuries are staggering when direct expenditures are combined with lost productivity due to disability and premature death. These costs are high in part because of the severity of the injuries and the young age of most of the decedents. These costs are often borne by taxpayers though Medicaid and the costs of unreimbursed care provided by hospitals.[1]

Average annual number of Kansas firearm deaths 1995-1998:

Unintentional	12 deaths
Homicide	107 deaths
Suicide	195 deaths
Undetermined	6 deaths
Total	320 deaths

Firearm Deaths by Intent

Kansas 1995-1998

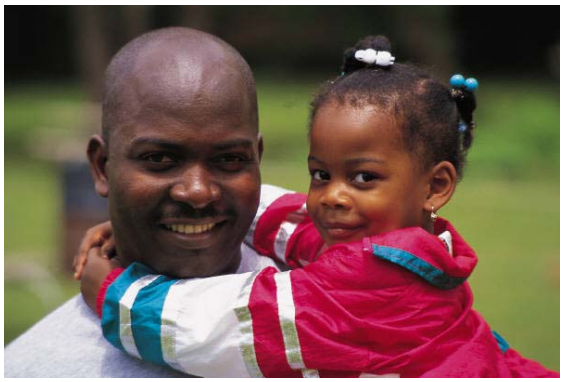


Objective 11: Reduce the age-adjusted rate of firearm-related deaths to less than 4.9 per 100,000 population by 2010.

Kansas baseline: 12.4 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Kansas Observations

- Firearms are the second leading cause of injury deaths among Kansans (1995-1998).[2]
- In 1996, 28 firearm deaths occurred among Kansas children age 0 to 17. Of 28 firearm deaths, two were unintentional, 17 were suicides, eight were homicides and one was undetermined.[3]



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- The State Child Death Review Board specified details of individual cases: a 13-year-old boy playing "Russian roulette" after loading one bullet into a revolver; a 14- year-old boy mistaking his 13- year-old friend for an intruder, and shooting him with a gun from a bedroom; a 13-year-old who was alone in an upstairs bedroom when a gun was discharged. His younger brother and mother found him dead with a gunshot wound to his head.[3]

National Observations

- Firearms are the second leading cause of injury death in the United States.[4]
- Almost half the unintentional deaths occurred to adolescent males aged 15 to 24, (21 out of 47 deaths).[5]
- Males 15 to 44 were the most common homicide victims, (307 out of 427 deaths).[5]
- Firearm suicides were more common among men aged 15 years and older, (only 12% of firearm suicides were among women).[5]
- The majority of firearm injuries and deaths in the United States are caused by handguns.[5]

International Observations [4]

- In 1996, 15 children died in Japan from firearm injuries; in Britain, 30; in Canada 105; while in the United States, more than 9000.[4]
- Japan - .12 per 100,000 population Kansas - 1.08 per 100,000 population

Recommended Strategies

Minimize the risk of unsupervised child access to loaded weapons by locking up ammunition and firearms separately.

Increase surveillance to improve understanding of Kansas firearm injuries; national data may not always reflect the differences between states.

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Motor Vehicle

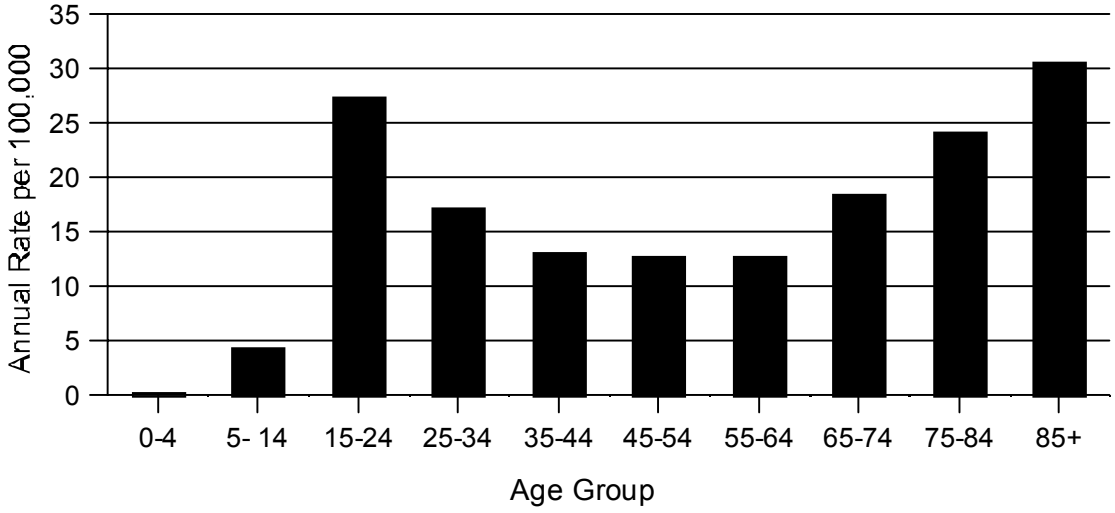
Motor vehicle traffic collisions are the number one cause of overall injury deaths in Kansas for persons aged 1-74. Rates for crash deaths involving occupants of motor vehicles are highest among persons aged 15-24 and persons aged 85 and older.[1]

Between 1997 and 1999, 1,265 Kansans were killed in motor vehicle crashes.

In Kansas, one motor vehicle crash is reported on average every 7 minutes and one person is injured in a traffic incident on average every 18 minutes.[1]

Motor Vehicle-Related Deaths Among Occupants

Kansas 1995-1998



Objective 12: To reduce the age-adjusted rate of deaths caused by motor vehicle collisions to no more than 17 per 100,000 population by 2010.

Kansas baseline: 19.5 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Kansas Observations

- Most motor vehicle crashes in Kansas (63%) occurred in urban areas, but most fatalities (77%) occurred in rural areas."[2]
- For every one Kansan killed in a motor vehicle crash, 64 were injured.[2]
- Of all fatal motor vehicle crashes, 43% occurred at night.[2]
- Of the 469 people killed in vehicular collisions, only 19% (88) were wearing seat belts.[2]
- Between 1991 and 1998, 19% of all motor vehicle-related fatalities involved alcohol.[3]
- "If you are a Kansas driver, you can expect to be involved in one accident every 15 years.[2]

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- In Kansas, the most crash prone day and time is Friday afternoon. The day most prone to motor vehicle-related fatalities is Sunday afternoon.[2]

National Observations

- In 2000, 21% of drivers 15-20 years old who were killed in crashes were intoxicated.[4]
- The numbers of drivers 15-20 years old involved in fatal crashes who were intoxicated dropped by 38 % between 1990-2000.[4]
- The National Highway Traffic Safety Administration estimates that the enactment of the 21-year old minimum drinking age laes have reduced traffic fatalities by 13% for drivers 18-20 years old.[4]
- Twenty-three states now require their young drivers to pass through a Graduated Driver Licensing System. Graduated Driver Licensing is a three step licensing process that gradually phases in new drivers as skills are learned. Features include night time driving restrictions and certified hours of parental instruction.

Recommended Strategies

It has been estimated that minimum drinking age laws saved 861 lives in the United States in 1998 alone. As of 1998, all states have set a blood alcohol limit of .02 or lower for drivers under the age of 21 (zero tolerance laws).[5]

The decline in motor vehicle-related deaths has been attributed to several causes, including improved crash worthiness of automobiles, increased seat belt use, and reduced alcohol use.[5]
Child safety restraints such as car seats and booster seats are highly effective if used properly.[6]

References:

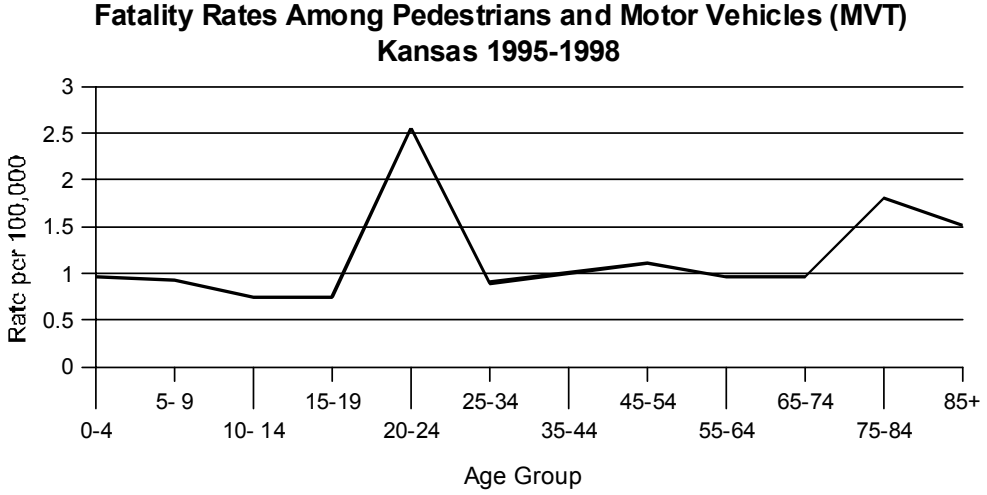
1. Kansas Department of Transportation: Reported motor vehicle fatalities on Kansas roadways, 1999.
2. Kansas Department of Transportation. 1996 Kansas Traffic Accident Facts.
3. KDOT. (1999). State of Kansas, alcohol involvement in motor vehicle accidents, 1991-1998.
4. National Highway Traffic Safety Administration. (2002). Traffic Safety Facts 2000, Young Drivers. NHTSA:US Dept. of Transportation.
5. Robertson, LS. (1996). Reducing death on the road: The effects of minimum safety standards, publicized crash tests, seat belts, and alcohol. AJPH, 86(1), 31-33.
6. Center for Applied Behavioral and Evaluation Research. (2001). Booster Seats: A Review of the Literature on Best Practices.

Pedestrian Injuries

Between 1995 and 1998:

There were 153 pedestrians killed in Kansas. Most of these incidents involved a motor vehicle.[1]

- Among pedestrian injury deaths, rates were highest in the 20-24 and 75-84 age groups respectively.
- Between 1995 and 1998, 14 children aged 9 and under were, as pedestrians, killed after being struck by a motor vehicle.[1]



Objective 13: To reduce the age-adjusted rate of pedestrian fatalities involving motor vehicles to no more than .9 per 100,000 population by 2010.

Kansas baseline: 1.3 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Kansas Observations Mortality 1995-1998[1]

- 115 pedestrians were killed after being struck by a motor vehicle.[1]
- In Kansas,1995-1998, 68% of all pedestrians who were killed after being struck by a motor vehicle were male.[1]
- Pedestrian deaths account for about 6% of all specified motor vehicle related deaths in Kansas, second in comparison to drivers or occupants of motor vehicles (79%)[1].

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- One pedestrian is killed approximately every 10 days in Kansas.[1]

Morbidity, 1997 [2]

- The highest percent of hospitalizations with E-codes indicating injuries among pedestrians struck by a motor vehicle occurred among males 5-9 years of age. Older Kansans aged 65 and older were also at increased risk.

National Observations

- In the United States, 5,220 pedestrians died of traffic-related injuries and another 69,000 pedestrians sustained non-fatal injuries in 1998.[3]
- Of all pedestrians aged 16 years and older who were killed in nighttime crashes, 55% had been drinking.[4]
- In the United States, the rate of pedestrian deaths has decreased 42% from 1975-1996.[4]
- Pedestrians age 70 years and older accounted for 18% of all pedestrian fatalities. The death rate for this group was 3.92 per 100,000 people – higher than any other age group.[3]
- Most pedestrian deaths occurred between the hours of 3:00 P.M. and midnight.[4]
- Hit and run crashes account for 18% of all deaths among pedestrians.[4]

Recommended Strategies from the Centers for Disease Control & Prevention:

Longer WALK signals at traffic lights.

Creating barriers between traffic and pedestrians, such as easements, sidewalks, overpasses, underpasses, and footbridges.

Restricting the legal blood alcohol levels of pedestrians.

Slower speed limits on streets with heavy pedestrian traffic.

***References*:**

1. Center for Health and Environmental Statistics. KDHE. Topeka, KS.
2. Kansas Hospital Association. Kansas Hospital Discharge Data System, 1997 [Data file]. [Approximately 53% of all hospital discharges due to injury included an external cause of injury code (E-code). Therefore, the findings in this report likely underestimate the overall burden of injury in the State of Kansas.]
3. NHTSA Traffic Safety Facts, 1996: Pedestrians. (1997). Washington (DC): National Highway Transportation Safety Administration.
4. Insurance Institute for Highway Safety (IIHS). (1997). Facts 1996 Fatalities: Pedestrians. Arlington (VA): IIHS.

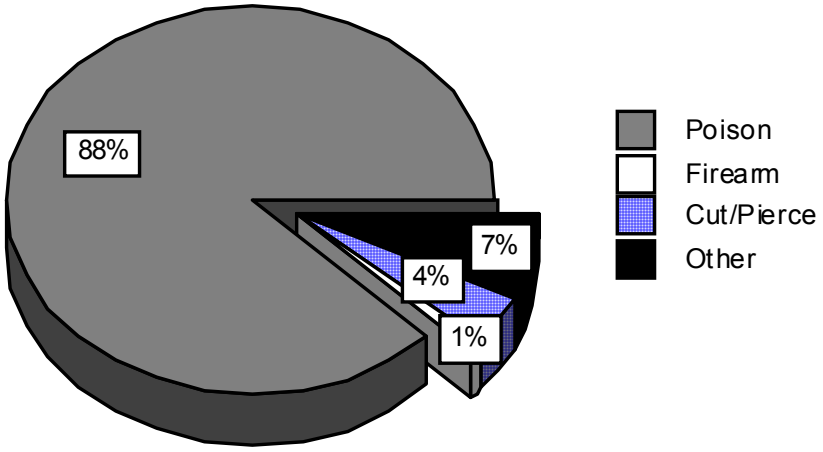
Poisoning

In Kansas, poisoning is the fifth leading cause of injury deaths.[1]

Children under 5 years of age account for 14 % of hospitalizations E-coded as unintentional poisoning in 1997.[2]

In Kansas, between 1995 and 1998, 57% of all poisoning deaths were suicides, while 43% of poisoning deaths were unintentional.[1]

Percentage of Hospitalizations for Self-Inflicted Injuries by Type of Injury, Kansas, 1997



Objective 14: Reduce the age-adjusted rate of unintentional poisoning deaths to no more 1.5 per 100,000 population by 2010.

Kansas baseline: 2.3 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Kansas Observations Intentional (Self-Harm)

- Hospital E-coded data indicates that 90% of the hospitalizations for self-inflicted injuries were due to poisoning.[2]
- In Kansas, in 1997, 65% of all poisoning suicide *deaths* were among males.[1]
- Hospital discharge data (1997) indicates that 70% of hospitalizations E-coded as a suicide attempt were among females.[2]
- Between 1995 and 1998, 235 Kansans committed suicide using a poisonous substance. Over half of these deaths (66%) were among males.[3]

Unintentional

- Between 1995 and 1998, 182 Kansans died due to unintentional poisoning.[1]
- The highest number of deaths due to unintentional poisoning occurred among males aged 25-44. (1995-1998)[1]
- In 1999, 50% of deaths due to unintentional poisoning occurred among males aged 35-54. In 41% of these deaths, the primary cause was poisoning by exposure to narcotics and hallucinogens.[1]

National Observations

- In the United States, about three-fourths of all poisonings deaths were due to drugs. The remaining were mostly caused by gases and vapors.[3]

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- Nationally, about two-thirds of all drug-related poisonings, and poisonings from other liquid or solid substances were unintentional. However, nearly three fourths of all poisonings involving gases were suicides.[3]
- Poison control centers are extremely cost effective. For every $1 spent on poison control centers, an estimated $7 is saved in medical care costs. By helping people manage emergencies at home, these centers prevent about 50,000 hospitalizations and 400,000 doctor's visits each year.[4]

Recommended Strategies

Intentional (Suicide): See section on suicide for targeted activities.

Unintentional: Most poisonings happen in the home. Therefore, prevention efforts should focus on this environment.[3]

The proper use of safety devices is recommended. Devices such as safety latches are needed to prevent children's access, even if the products inside the cabinet are in child-resistant containers.[4]

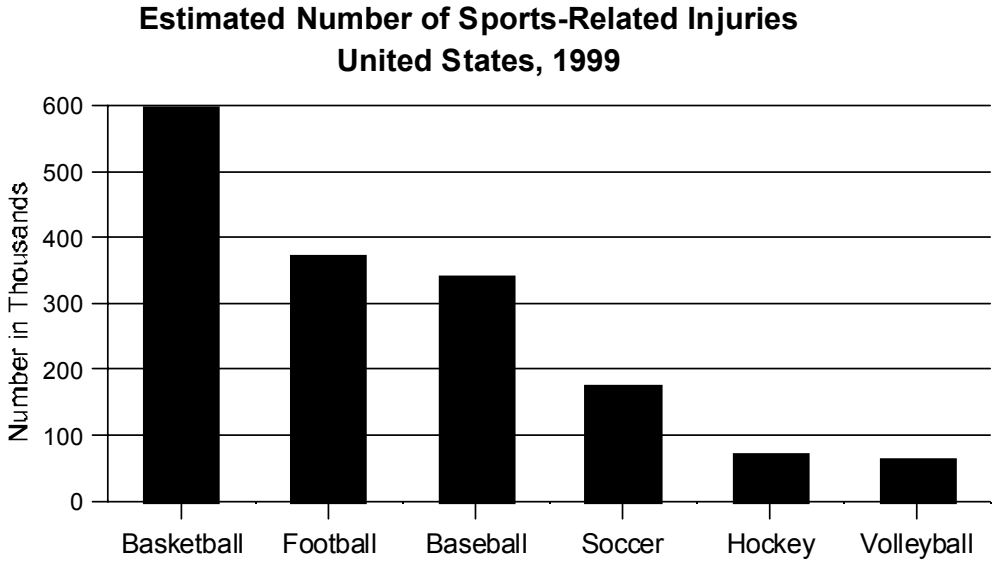
***References*:**

1. Center for Health and Environmental Statistics. KDHE. Topeka, KS.
2. Kansas Hospital Association. Kansas Hospital Discharge Data System, 1997 [Data file]. [Approximately 53% of all hospital discharges due to injury included an external cause of injury code (E-code). Therefore, the findings in this report likely underestimate the overall burden of injury in the State of Kansas.]
3. Fingerhut, LA, & Cox, CS. (May/June 1998). Poisoning mortality 1985-1995. *Public Health Reports,* 13, 219-233.
4. Miller, TR & Lestina, DC. (1997). DC. Costs of Poisoning in the United States and Savings From Poison Control Centers: A Benefit-Cost Analysis. *Annals of Emergency Medicine*, 29(2), 239-45.

Sports Injuries

According to the National Electronic Injury Surveillance System (NEISS) of the Consumer Products Safety Commission, "each year 3.5 million sports-related injuries in children under age 15 are treated in hospitals, doctors' offices, clinics, ambulatory surgery centers, and hospital emergency rooms.[1]

Nationally, each year 20% of all children participating in sports are injured; one fourth of these injuries are considered serious. By becoming aware of the causes and prevention of sports injuries, athletic participation can be a more rewarding experience.[2]



Objective 17: Establish surveillance of sports-related injuries in Kansas by 2005.

Kansas Baseline data not available.

Kansas Observations

No statewide data available.

National Observations

- In 1997-1998 there was a yearly average of 2,616,000 sports related emergency room visits for persons aged 5-24.[3]
- Twenty-one percent of all traumatic brain injuries in children are the result of sports or recreational activities.[4]
- Nationally, the estimated number of emergency room visits (1999) for sports related injuries in the age range 5-14 are as follows:
  193,453...basketball,
  172,117...football,
  130,170...baseball, softball,
  80,958.....soccer.[5]
- The majority of sports related injuries involve soft tissue rather than the bones. About two thirds of all injuries are strains and sprains.[6]
- The rate of sports-related injuries among persons aged 25 to 64 years increased 18% between 1990 and 1996. For those age 65 and older, the rate increased by 54%.[7]
- In the time period 1990-1996, the highest number of sports injuries to persons $65 were associated with bicycles and bicycling.[7]

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Recommended Strategies

Establish surveillance for sports-related injuries in Kansas.

Obtain data on sports-related injuries in Kansas through such data sources as emergency room data, hospital discharge data, school nurses, and targeted surveys of the population.

Guidelines from **Play It Safe!** [1] encourages children to:

- Be in proper physical condition to play a sport.
- Know and abide by the rules of the sport.
- Wear appropriate gear.
- Know how to use athletic equipment.
- Always warm up before playing.
- Avoid playing when very tired or in pain.

References:

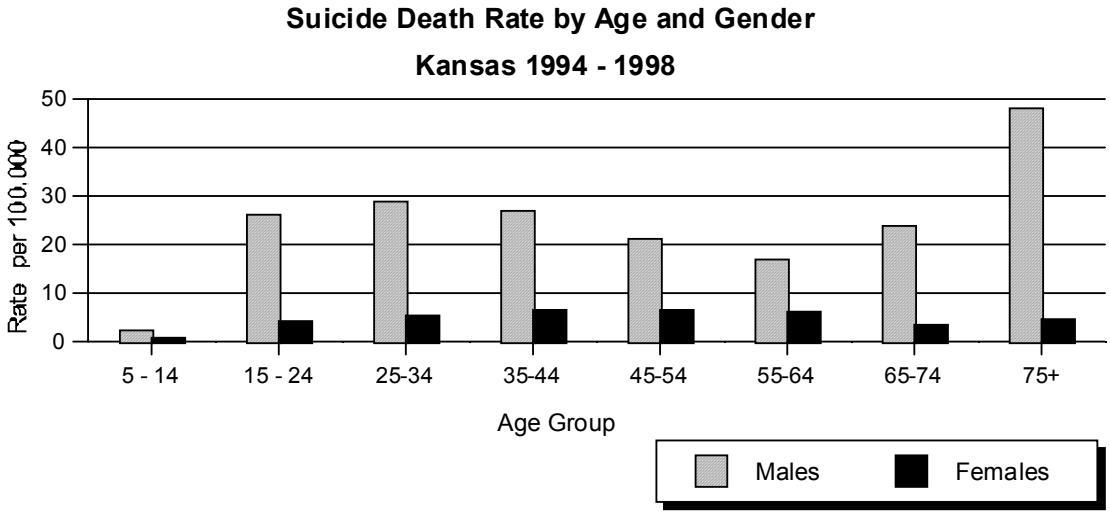
1. American Academy of Orthopedic Surgeons. (2000). Play it Safe Sports: A Guide to Safety for Young Athletes. Available at http://
2. Bull, RC. (1998). Handbook of Sports Injuries. McGraw-Hill.
3. National Center for Health Statistics. Ambulatory Health Care Data. Available at http://www.cdc.gov/nchs/about/major/ahcd/injurytable.htm. Accessed Jan. 14, 2002.
4. American Medical Association. (2000). Safety and Accident Prevention: Preventing Children's Sports Injuries.
5. U.S. Consumer Product Safety Commission. NEISS Data Highlights – 1999 1998;3(1):3-4.
6. American Academy of Pediatrics.(2000). Sports Injuries.
7. U.S. Consumer Product Safety Commission.(1998) Sports and older Americans. Consumer Product Safety Review, 3(1), 4.

Torin, 2 permission from Mom

Suicide

In 1998, Kansas had a higher age-adjusted rate of suicide (12.5) than the national average (11.3). The number of suicides in Kansas is more than 50% higher than the number of homicides each year.[1, 2]

In 1999, the U.S. Surgeon General prepared a *Call to Action* to prevent suicide and introduced a blueprint to increase awareness, improve interventions, and improve research.[3]



Objective 18: Reduce the age-adjusted rate of suicides to no more 10.1 per 100,000 population by 2010.

Kansas baseline: 12.5 per 100,000 population, age-adjusted rate
Source: KDHE Center for Health and Environmental Statistics, 1998

Kansas Observations Completed Suicides (1995-1998)[1]

Kansans completed 1, 296 suicide between 1995 –1998.

In 60% of completed suicides, firearms were the method of choice.

The highest rate of firearm-related suicides occurred among those aged 75 to 84.

Males were 5 times more likely than females to complete suicide with a firearm.

The highest increases of suicide death rates over time (1989-1998) were seen in the 15 - 24 age group and the 35 - 44 age group.[1]

In the 1996 - 1998 time interval, suicide was the second leading cause of death for the age range 25-34.[5]

Hospitalizations Related to Self Inflicted Injuries[4]

Hospitalizations among females are more common in the 15-19 age group compared to other age ranges according to E-coding from hospital discharge data**.**

90% of hospitalizations for self-inflicted injuries identified by E-coding were due to poisoning.

National Observations[3]

Suicide is the ninth leading cause of death in the United States, responsible for nearly 31,000 deaths each year.

The number of suicides occurring in the United States is more than double the number of homicides.

Each year, approximately 500,000 persons require emergency room treatment as a result of an attempted suicide.

51% of all firearm deaths in the United States are suicides.

Recommended Strategies

The Surgeon General recommends targeting three areas for suicide prevention.[3]

Awareness - Efforts include broadening the public's awareness of suicide and its risk factors. Promote the notion that suicide is preventable.

Intervention - Enhance services and programs in the community and at the clinical care level.

Methodology - Advance the science of suicide prevention by improving research and developing scientific strategies to prevent suicide.

The Kansas Child Death Review Board recommends the following:

Conduct autopsy and law enforcement investigations in all suspected child suicide deaths.

Keep firearms locked and away from unsupervised children.

Educate the public to take suicide threats seriously.

***References*:**

1. *Center for Health and Environmental Statistics. KDHE. Topeka, KS.*
2. *CDC. (1999). Kansas Health People, 2000. US Dept. Health & Human Services, Wash. DC.*
3. *U.S. Public Health Service. (1999). The Surgeon General's Call to Action to Prevent Suicide. Washington, DC.*
4. *Kansas Hospital Association. (2000). Kansas Hospital Discharge Data System, 1997. [Approximately 53% of all hospital discharges due to injury included an external cause of injury code (E-code). Therefore, the findings in this report likely underestimate the overall burden of injury in the State of Kansas.]*
5. *Dept of Health and Human Services, CDC (n.d.). State injury profiles for Kansas. Retieved January 23, 2002, from http://www.cdc.gov/ncipc/StateProfiles/index.htm*

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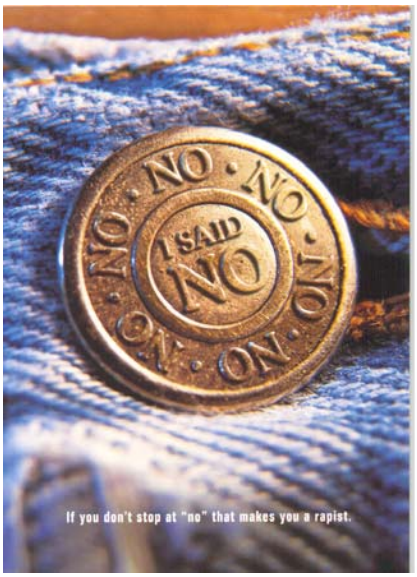
SECTION II

EVENTS THAT PREDISPOSE KANSANS TO INJURY



"If you don't stop at "no" that makes you a rapist." Awareness Campaign designed by the : Minnesota Coalition Against Sexual Assault

The Injury prevention Steering Committee identified some events, such as the intentional acts described in this section as significant sources of injury among Kansans.

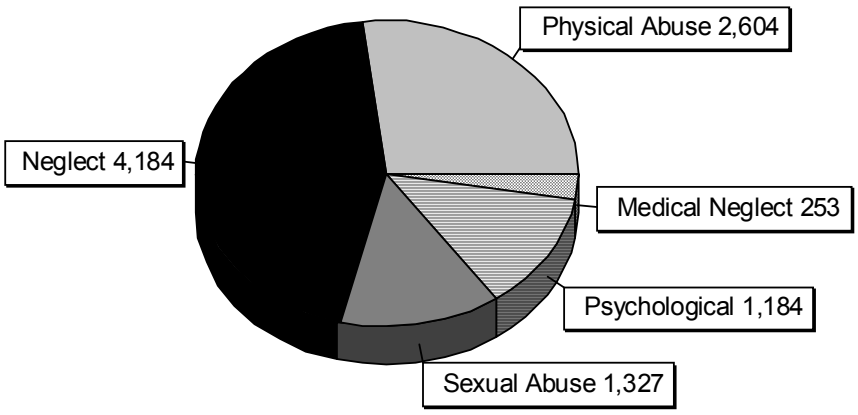
Child Abuse and Neglect

During 1999 in Kansas, there were 28,694 reports of child abuse and neglect and 8,452 substantiated reports.

A parent or other relative was identified as the perpetrator in approximately 72 percent of the cases.[1]

The Kansas Department of Social and Rehabilitation Services, Division of Children and Family Policy, aids in the prevention and identification of child maltreatment and provides protective services to secure the safety, permanence, and well-being of the children.

Substantiated Number of Abused and Neglected Children
Kansas 1999



Objective 2: Reduce to less than 10.3 per 1,000 children the rate of substantiated reports of maltreatment of children younger than 18 by 2010.

Kansas baseline: *12.1 per 1,000 children*
Source: U.S. Department of Health & Human Services, 1999

Kansas Observations[1]

In Kansas in 1999, there were over 2,600 cases of reported physical abuse among children. Additionally, there were over 1,300 cases of reported sexual abuse.

There were six deaths reported in Kansas during 1999 due to child abuse and neglect.

Numbers of cases may not necessarily measure actual rates of maltreatment. Not all cases are reported, and not all reported cases are confirmed.

National Observations

In 1999, 86.1% of the children, who died from maltreatment were younger than 6 years of age, while 42.6% were younger than 1 year.[1]

Maltreatment deaths were associated with neglect (38.2%), physical abuse (26.1%), and a combination of neglect and physical abuse (22.7%).[1]

It has been shown in several studies that parental substance abuse was associated with child maltreatment.[2,3] In one study, those adult respondents with an alcohol or drug disorder were 2.7 times more likely to have reported abusive behavior toward children and 4.2 times more likely to have reported neglectful behavior toward children than their matched control subjects.[2]

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Recommended Strategies

Obtain better surveillance data for child maltreatment in Kansas. Partner with programs and services focusing on child maltreatment in an effort to establish better data collection and reporting.

Early identification and assessment of families at risk for potential abuse or neglect.

Comprehensive home health visitors for all expectant and new mothers determined to be at risk for potential abuse or neglect.

Coordination of community services and resources for families identified as at-risk, including accountability measures and treatment for the perpetrators of the abuse or neglect.

Communication and coordination between domestic violence advocates and child protective services is important in the prevention and intervention of child abuse.

Awareness of child abuse and neglect through education of the community, families, health care providers, and other professionals.

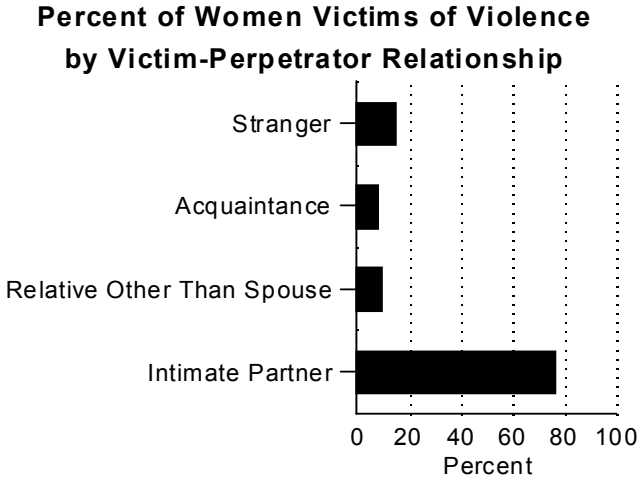
References:

1. Department of Health and Human Services, Children's Bureau. (2001). Child Maltreatment 1999. Reports From the States to the National Child Abuse and Neglect Data System. Retrieved Aug. 8, 2001 from http://www.calib.com/nccanch/
2. Kelleher K, Chaffin M, Hollenberg J, Fischer E. (1994). Alcohol and Drug Disorders among physically abusive and neglectful parents in a community based setting. *Am J Pub Health*, 84(10), 1586-1590.
3. Overpeck & Scheidt, PC. (1992). Parental alcohol use, problem drinking and child injuries. *JAMA,* 23, 3166-3171.

Domestic and Sexual Violence

Sexual violence includes sexual assault and rape.[1]
"Domestic violence is any verbal and/or physical abuse ranging from simple assault to homicide."[2]

Each year more than one million women nationally seek medical treatment for injuries inflicted by husbands, ex-husbands or boyfriends.[1]



Objective 4: Reduce the rate of physical assault by current or former intimate partners to no more than 4.3 per 1,000 population by 2010.

Kansas baseline: 5.3 per 1,000 (based on spouse, common-law, intimate partner, homosexual relationship, ex-spouse, and ex-intimate partner.)
Source: Attorney General's Office & KBI, 1998

Objective 5: Reduce sexual assaults other than rape by 2010.

Kansas baseline: NA

Objective 6 : Reduce the annual rate of rape of female persons aged 10 and older to less than 0.55 per 1,000 population by 2010.

Kansas baseline: 0 .74 per 1,000

Kansas Observations[2]

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Domestic Violence

- In 65% of the incidents reported in the Kansas Incident Based Reporting System, the offender was an intimate partner.
- The average victim was a white female between the ages of 20 and 29.
- At least 32 percent of domestic violence incidents resulted in an injury.

Rape[2]

- Between 1988 and 1999, Kansas experienced a 49% increase in the number of rapes reported to law enforcement.
- In approximately 13% of reported rapes, the rapist was an intimate partner.
- Approximately 20% of rapes in Kansas resulted in an external physical injury.
- 70% of female rape victims in Kansas were between the ages of 10 and 24.

National Observations

- Research indicates that as many as 30% of women treated in emergency departments have injuries or symptoms related to physical abuse.[3]
- Women are significantly more likely than men to be injured during a physical assault or rape. 39% of female assault victims and 32% of female rape victims were physically injured during their most recent attack.[4]
- 76% of women who were raped and/or physically assaulted after the age of 18 were assaulted by a current or former husband, cohabitating partner, or date.[4]

Recommended Strategies

Support school and other community based education programs to prevent violence.

Training of health care providers and other interested professionals in routine screening and referral for intimate partner violence is needed.

Support a coordinated community response for victims of domestic and sexual violence that includes holding the perpetrators accountable for their violent behavior.

Develop and implement a statewide surveillance system for domestic and sexual violence.

Target perpetrators of intimate partner violence in prevention and intervention (treatment) programs.

References:

1. *Facts on Domestic Violence. National Coalition Against Domestic Violence, Washington, DC.*
2. *A Report on Domestic Violence and Rape in Kansas, 1998. (1999). Office of the Attorney General & Kansas Bureau of Investigation.*
3. *CDC. (1999). Violence and Injury Fact Sheet. Office of Women's Health.*
4. *NIJ & CDC. (1998). Prevalence, incidence, and consequences of violence against women: findings from the national violence against women survey. (NIJ No. 172837). Washington DC: U. S. Government Printing Office.*

School Violence

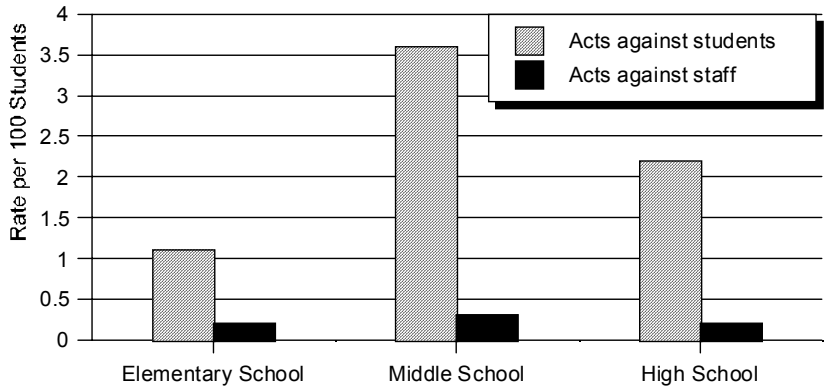
Since the early 1990's, rates of violent victimization and weapon carrying at schools have decreased steadily.

However, levels of violence in our schools still remain unacceptably high. As a result, fear for safety at school has increased among students and teachers alike.[1]

Nationally, between 1996 and 1997, 10% of all public schools reported at least one serious violent crime (including murder, sexual battery/rape, attacked with a weapon, or robbery) to law enforcement officials.[1]

Nationally, 9% of school children between the ages of 12 and 19 reported feeling unsafe while they were at school or going to and from school.[1]

Reported Rates of Violent Acts Against Students and Staff in School, Kansas, 1998



Objective 15: To reduce violent acts against students in Junior High/ Middle Schools to no more than 3.1 per 100 students by 2010.

Kansas baseline: 3.6 per 100 students

Objective 16: To reduce violent acts against students in High Schools to no more than 1.8 per 100 students by 2010.

Kansas baseline: 2.2 per 100 students
Source: Kansas Department of Education, 1998-1999 school year

Kansas Observations

- Middle schools and junior high schools exhibit the highest rates of student on student violence, and student on staff violence.[2]
- *Note:* The Kansas Department of Education defines violent behavior as malicious acts against students/staff which result in the student receiving an out-of-school suspension or expulsion.

National Observations

- Schools remain one of the safest places for children to be at any given time.[3]
- Nationally, the rate of weapon carrying and fighting among high school students declined between 1991 and 1997.[4]
- Males are typically more likely to be threatened or injured with a weapon on school property than females.[1]
- The CDC's School Health Policies and Programs Study has shown that 91% of all school districts in the United States have a written policy prohibiting student violence and 80% have a policy that addresses weapon possession.[3]
- The perpetrator and the victim of a violent crime are of the same race about 90% of the time.[1]
- Between 1992 and 1996, 619,000 teachers were victims of violent crimes, mainly simple assaults. Middle and junior high school teachers were most at-risk for victimization.[1]

Recommended Strategies

The *Bullying Prevention Program* has provided bully prevention training in 220 school districts throughout Kansas.[5] Program evaluation in schools using this program could allow surveillance of bullying behaviors in Kansas schools.

Improvements in the surveillance of school-related violence would be helpful in establishing prevention programs in Kansas.[1]

Comprehensive violence prevention programs are recommended for schools. Nationally, most schools have a formal violence prevention program in their schools.[1]

***References*:**

1. Kaufman P, Chen X, Choy SP, et al. (1998). Indicators of school crime and safety, 1998. Washington, DC: US Depts. Of Education and Justice.
2. Kansas Department of Education. (1998). K-12 School Demographics.
3. CDC. (1999). Facts about Violence Among Youth and Violence in Schools. Atlanta, GA.
4. Brener, ND, Simon TR, et al. (1999) Recent. trends in violence-related behaviors among high school students i the United States. JAMA, 282,5.
5. Wiler, R. Director of Kansas Bullying Prevention Program (personal communication, Jan 16, 2002.)

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SECTION III

DATA ISSUES

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The Injury Prevention Steering Committee researched current and potential injury related data sources and recommended the following to build injury surveillance capacity to more effectively reduce injuries in Kansas.

Data Issues in Injury Control

The injury section of KDHE currently has only direct access to three sources of injury data: vital statistics data, hospital discharge data, and behavioral risk factor surveillance system (BRFSS) data.

KDHE also has indirect access to the following data mechanisms: Kansas Department of Transportation crash data, Kansas Bureau of Investigation crime data, and Child Death Review Board data.

Currently, no statewide, comprehensive emergency room data, Youth Risk Behavior Survey data, or trauma data exist in Kansas.

Recommended data sets for core injury surveillance for state injury programs. [1]

Data set	Injuries potentially captured
Vital Records	All causes of injuries
Hospital Discharge	All causes of injuries
Fatal Analysis Reporting System	Motor vehicle injuries only
Behavioral Risk Factor Surveillance System	All causes of injuries
Youth Risk Factor Surveillance System	All causes of injuries
Emergency Department	All causes of injuries
Medical Examiner	All causes of injuries
Child Death Review	All child injury deaths, age 0-17
National Occupant Protection Use Survey	Motor vehicle injuries only
Uniform Crime Reporting	Crime related injuries only
Emergency Medical Services	All causes of injuries

Objective: Increase access to data for research & policy use for state & community injury prevention and control activities by 2005.

a) Facilitate statewide E-coding of injuries and gain 100% voluntary participation.

b) Institute a State trauma registry and gain 100% voluntary regional participation.

c) Increase the availability of emergency room data to a statewide basis.

Kansas Observations

- E-coded data are incomplete in Kansas. E-codes describe the *intent* (unintentional, suicide, or homicide) and the *mechanism* (i.e. fall, firearm) of an injury.
- In Kansas, the main data set that has complete E-coding is the Vital Records data system maintained by the Center for Health and Environment Statistics, KDHE. The Kansas Department of Transportation Crash data system is also E-coded.
- The hospital discharge data is also maintained by the Center for Health and Environment Statistics, KDHE and is 53% E-coded. For optimal benefit, at least 90% E-coding is desired. Many states now have the desired level.
- Our neighboring states, Missouri and Nebraska, both mandate the collection of E-codes in their hospital discharge data systems and their emergency department data systems.[2]

National Observations

- Injury surveillance has been defined as the "ongoing process of tracking and monitoring incidence rates, causes, and circumstances resulting in fatal and non-fatal injuries."[1]
- Surveillance of injuries generally follows the *Injury Matrix* as defined by the CDC.[3] This matrix stratifies injuries by intent (unintentional, suicide, homicide, other) and mechanism/cause of injury (fire, fall, motor vehicle, etc.)
- In order to obtain a comprehensive surveillance system for injuries, states ideally would have access to the 11 core data sets shown in the table on page 32. (In reality not all sets exist in all states; access to others may be denied because of confidentiality or proprietary concerns.) Using multiple sets to assess the injury problem may help in detecting specific types of injury problems, designing interventions to address specific problems, and evaluating how well the interventions are working.1
- Using multiple data sets for surveillance allows for data linkage. By linking data, more information about an injury event can be gathered.

Recommended Strategies

An increase in the percentage of E-coded injury events is needed within the Kansas hospital discharge data system. Promoting the level of E-coding to 100% is vital to the surveillance of serious injuries in Kansas.

Promoting E-code training of health care providers and medical record coders may help to improve the level of E-coding in the State.

Continue to establish and build upon good working relationships between data handlers in the injury field in the state of Kansas, such as the Center for Health and Environment Statistics, KDHE, the Child Death Review Board, Kansas Bureau of Investigation, the Department of Transportation, Kansas Department of Social & Rehabilitation Services, and Emergency Medical Services.

References:

1. Consensus recommendations for injury surveillance in state health departments. (1999). State and Territorial Injury Prevention Directors' Association.
2. How States are Collecting and Using Cause of Injury Data. (1998). American Public Health Association.
3. Centers for Disease Control & Prevention. (1997). Recommended framework for presenting injury mortality data. *MMWR*; 46(rr-14).

Appendix A: Injury Pyramid, US, 1995

ADAPTED FROM: *Health, United States,1996-97 and Injury Chart Book*, U.S. Dept. of Health and Human Services
SOURCES: Centers for Disease Control & Prevention, Natl. Ctr for Health Statistics, Natl. Vital Statistics System, Natl. Hospital Discharge Survey, Natl. Ambulatory Medical Care Survey, Natl. Health Interview Survey

The pyramid above provides graphic representation of injury in the United States. Kansas is missing a significant part of the picture, though, since the state only partially collects hospital discharge data, and has little or no information on emergency room visits or the overall number of injuries reported to medical professionals. Kansas does collect complete statistics on the number and causes of death.

Death is, of course, very serious and subsequently tends to receive greater media and public attention than other consequences of injury. However, as the pyramid demonstrates, deaths are only the tip of a much larger iceberg. Those injuries that do not commonly result in death, yet are prevalent in the State of Kansas, risk being overlooked. These non fatal injuries contribute to significant long-term or permanent disabilities, time lost from work or family responsibilities, costly medical expenses, pain and suffering.

Appendix B: Understanding Injury, the Haddon Matrix

Injury includes a wide range of topics, and may involve the complex interaction of many elements. One tool for understanding injury is the Haddon matrix, which displays the interaction of the different sources– or factors– of injury over time. For our purposes, three items are involved in any injury event: the person, the agent of injury, and the physical and social environment. These primary factors exist and interact across three phases of time: a pre-event phase (before the injury), an event phase (during the injury), and a post-event phase (after the injury).

The Haddon matrix can also be used to identify points in the injury process where interventions are most likely to succeed. From this perspective, injury prevention consists of efforts to:

1. Prevent the creation of the hazard (plan physical environment so children will not need to cross busy highways on their way to and from to school)
2. Reduce the amount of the hazard (advocate statewide school-based bully prevention programs)
3. Prevent the release of the hazard (store radioactive material securely)
4. Modify the rate or spatial distribution of the hazard (maintenance and inspection of gas burning equipment in the home to minimize the potential for exposure to CO
5. Separate people from the hazard (create bike lanes on public roads)
6. Place barriers between people and the hazard (erect fences around construction sites
7. Modify relevant aspects of the hazard (vehicular speed limits)
8. Strengthen human resistance to the hazard (stretch before strenuous physical activity
9. Counter damage that has already occurred (improve emergency medical treatment
10. Stabilize, repair and rehabilitate the injured (expand quality rehabilitation services)

THE HADDON PHASE-FACTOR MATRIX
(bicycle crash example)

PHASES	FACTORS: HUMAN	AGENT	PHYSICAL ENVIRONMENT	SOCIAL ENVIRONMENT
PRE-EVENT	• Experience • Eyesight	• Brakes, tires • Speed	• Traffic • Road conditions • Lighting	• Attitudes about bike safety
EVENT	• Helmet use • Flexibility • Clothing	• Frame strength	• Road surface • Roadside embankments	• Enforcement of bike helmet laws
POST-EVENT	• Age • Physical condition	• Entangled wreckage	• Distance to emergency services	• Training of EMS personnel

Haddon's matrix is not only a valuable prevention tool, but an important reminder that injuries are often avoidable. Understanding the injury process empowers individuals to prevent and hasten the debilitating effects of injury.

Appendix C

List of Abbreviations

BRFSS	Behavioral Risk Factor Surveillance System. Statewide telephone survey conducted by KDHE
CDC	Centers for Disease Control & Prevention
CHES	Center for Health and Environmental Statistic, KDHE
DHHS	Department of Health & Human Services
KDHE	Kansas Department of Health & Environment
KDOT	Kansas Department of Transportation
KHA	Kansas Hospital Association
NHTSA	National Highway Traffic Safety Administration
YRBSS	Youth Risk Behavior Surveillance System

Appendix D: ICD-9 E-Code Groupings Depicting Cause and Intent of Injury

Cause	Unintentional	Self-Inflicted	Assault	Other
Cut/pierce	E920	E956	E966	E974, E986
Drowning/Submersion	E830, E832, E910	E954	E964	E984
Fall	E880-886, E888	E957	E968.1	E987
Fire/Flame	E890-899	E958 (.1)	E968	E988.1
Hot object/Substance	E924	E958 (.2,.7)	E961, E968.3	E988.2,.7
Firearm	E922	E955.0-.4	E965.0-.4	E970, 985.0-.4
Machinery	E919			
MVT Accidents (collisions)	E810.0-819.9			
MNVT Occupant	E810-819 (.0, .1)			
MVT Motorcyclist	E810-819 (.2,.3)			
MVT Pedal Cyclist	E810-819 (.6)			
MVT Pedestrian	E810-819 (.7)			
MVT Unspecified	E810-819 (.9)			
Pedal Cyclist Other	E800-807 (.3); E820-825 (.6); E826 (.1,.9) E827-829 (.1)			
Pedestrian Other	E800-807 (.2); E820-825 (.7); E826-829 (.0)			
Bites/Stings	E905 (.0,.6,.9); E906 (.0,.6,.9)			
Nature/Environmental	E900-909 (.0,.2)	958.3		E988.3
Overexertion	E927			
Poisoning	E850.0-869.9	E950-952	E962	E972, E980.0-982.9
Struck By/Against	E916-917		E960, E968.2	E973, E975
Suffocation	E911-913	E953	E963	E983
Other Specified/ classifiable	E846-848, 914-915, 918, 921.0-.9, 923.0-.9, 925.0-926.9, 929.0-.5	E955.5, .9 E958.0,.4	E960.1, 965.5-.9, 967, 968.4	E971, 978, 990-994, 996, 997.0-.2
Other Specified/NEC	E928.8, E929.8	E958.8, 959	E968.8, 969	E977, 995, 997.8, 998, 999
Unspecified	E887, E928.9, E929.9	E958.9	E968.9	E976, 997.9

Abbreviated from Fingerhut LA, Warner M. Injury Chartbook. Health, United States, 1996-1997. Hyattsville, MD: National Center for Health Statistics. 1997.

Appendix E: Technical Notes

Death Rates

Death rates appear in three forms: age-adjusted, age-specific, and crude. When an age subgroup is being evaluated, rates are specific. Otherwise, either crude or age adjusted rates are used.

Age-adjustment

Age-adjustment is used to eliminate differences in observed rates that result from age differences in population composition. This adjustment is usually done when comparing two or more populations at one point in time or one population at two or more points in time. The year 2000 standard population served as the weights for calculating the age-adjusted rates in the report. Table 1 shows the year 2000 weights used in calculating the age-adjusted rates.

Table 1. Weights for the year 2000 standard population

Age	Weight
All ages	1
Under 1 year	0.013818
1-4 years	0.055317
5-14 years	0.145565
15-24 years	0.138646
25-34 years	0.135573
35-44 years	0.162613
45-54 years	0.134834
55-64 years	0.087247
65-74 years	0.066037
75-84 years	0.044842
85 years and over	0.015508

Objectives

Objective 1: To reduce the age-adjusted rate of deaths due to injury to no more than 53.4 per 100,000 population by 2010.

Kansas Baseline: 59.6 per 100,000 population, age-adjusted rate with year 2000 standard Definition: ICD-9 codes E800-E978

Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 2: Reduce to less than 10.3 per 1,000 children the rate of substantiated reports of maltreatment of children younger than 18 by 2010.

Kansas baseline: 12.1 per 1,000 children

Source: U.S. Department of Health & Human Services, 1999

Objective 3: Establish adequate surveillance of dog bite related injuries by 2005.

Kansas baseline: Unavailable

Objective 4: Reduce the rate of physical assault by current or former intimate partners to no more than 4.3 per 1,000 population by 2010.

Kansas baseline: 5.3 per 1,000 (based on spouse, common-law, intimate partner, homosexual relationship, ex-spouse, and ex-intimate partner.)
Source: Attorney General's Office & KBI, 1998

Objective 5: Reduce sexual assaults other than rape by 2010.

Kansas baseline: NA

Objective 6: Reduce the annual rate of rape or attempted rape of female persons aged 10 and older to less than 0.55 per 1,000 population by 2010.

Kansas baseline: 0 .74 per 1,000

Source: Attorney General's Office & KBI, 1998

Objective 7: To reduce the age-adjusted rate of unintentional drowning deaths to no more than 1.1 per 100,000 population by 2010.

Kansas Baseline: 1.8 per 100,000 population, age-adjusted rate with year 2000 standard

Definition: ICD-9 code E910
Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 8: Reduce the age-adjusted death rate caused by unintentional falls and fall-related injuries to no more than 2.4 per 100,000 population by 2010.

Kansas baseline: 7.1 per 100,000 population, age-adjusted rate with year 2000 standard

Definition: ICD-9 codes E880-E888

Source: KDHE Center for Health and Environmental Statistic, 1998

Objective 9: Reduce the age-adjusted rate of residential fire deaths to less than .6 per 100,000 population.

Kansas baseline: .93 per 100,000 population , age-adjusted rate with year 2000 standard

Definition: ICD-9 codes E890, E893.0, E895, E899

Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 10: Increase the proportion of households who report having a working smoke alarm in their home to 100% by 2010.

Kansas Baseline: Of the households surveyed, 90% had an installed and working smoke detector, *1999*

Source: Behavioral Risk Factor Surveillance System, Kansas

Objective 11: Reduce the age-adjusted rate of firearm-related deaths to less than 4.9 per 100,000 population by 2010.

Kansas baseline: 12.4 per 100,000 population, age-adjusted rate with year 2000 standard

Definition: ICD-9 codes E922, E955.0-.4, E965.0-.4, E970

Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 12: To reduce the age-adjusted rate of deaths caused by motor vehicle collisions to no more than 17.3 per 100,000 population by 2010.

Kansas baseline: 19.5 per 100,000 population, age-adjusted rate with year 2000 standard population

Definition: ICD-9 codes E810-E819

Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 13: To reduce the age-adjusted rate of pedestrian fatalities involving motor vehicles to no more than .9 per 100,000 population by 2010.

Kansas baseline: 1.3 per 100,000 population, age-adjusted rate with year 2000 standard

Definition: ICD-E-codes E810-E819 (.7)

Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 14: Reduce the age-adjusted rate of unintentional poisoning deaths to no more 1.5 per 100,000 population by 2010.

Kansas baseline: 2.3 per 100,000 population, age-adjusted rate with year 2000 standard

Definition: ICD-9 coding E850-E869

Source: KDHE Center for Health and Environmental Statistics, 1998

Objective 15: To reduce violent acts against students in Junior High/Middle Schools to no more than 3.1 per 100 students by 2010.

Kansas baseline: 3.6 per 100 students in 1998

Objective 16: To reduce violent acts against students in High Schools to no more than 1.8 per 100 students by 2010.

Kansas baseline: 2.2 per 100 students

Source: Kansas Department of Education, 1998

Objective 17: Establish surveillance of sports-related injuries in Kansas by 2005.

Objective 18: Reduce the age-adjusted rate of suicides to no more 10.1 per 100,000 population by 2010.

Kansas baseline: 12.5 per 100,000 population, age-adjusted rate with year 2000 standard

Definition: ICD-9 coding E950-E959

Source: KDHE Center for Health and Environmental Statistics, 1998

Population Estimates related to age-adjusted rates

The population data used to calculate age-adjusted rates was obtained through the KIC Population Statistics page available on the internet at the Kansas Information for Communities Data, KDHE website: http://kic.kdhe.state.ks.us/kic/.

These population tables use estimates from the US Census Bureau as of July 1 of the data year.

Table 2 shows the population data used for calculating the Kansas baseline age-adjusted rates for the Objective.

Table 2. Population for the State of Kansas, 1998

Age Group	Number
0-4	182,751
5-14	388,071
15-24	390,206
25-34	348,681
35-44	428,633
45-54	330,495
55-64	214,631
65-74	178,181
75-84	126,294
85+	50,724
Total	2,638,667